Understanding the Global Adoption of OCP Designs
A view from IDC on adoption, spend, & buyer intent

OCP Webinar

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Community-driven hyperscale innovation for all

Understanding the Global Adoption of OCP Designs
A view from IDC on adoption, spend, & buyer intent

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Agenda Overview

- OCP 2026+ Vision and Mission
- Ecosystem Scope and Expected Growth
- Driving Computational Infrastructure for AI
- Preparing Datacenter Networking for AI
- Delivering Data Center Power Infrastructure
- Developing Advanced Datacenter Cooling
- Ensuring Sustainable Datacenter Growth
- Takeaways & Predictions
- Live Q&A

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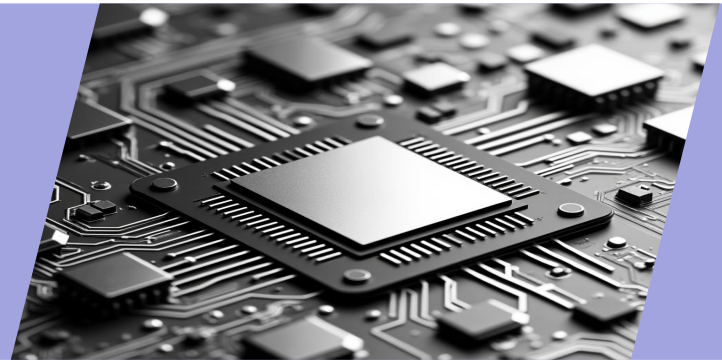
The OCP Open Data Center Ecosystem Vision

Strategic Domains: AI DCs, Cloud DCs, and the AI Computing Continuum

From Hyperscale to Regional

Technology Scope: Facilities & Physical Infrastructure, IT Infrastructure, and Systems Management



From Grid to Chip

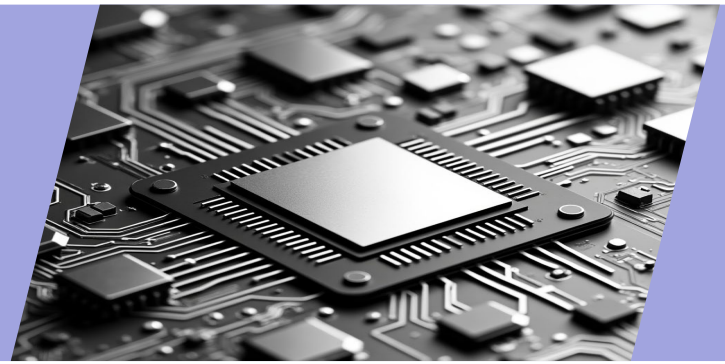
Strategic OCP Domains

AI DCs, Cloud DCs, and the AI Computing Continuum

AI DCs	Cloud DCs	AI Computing Continuum
• GW-scale AI Factories • Neocloud AI DCs • Wholesale Colo Provider • Power Co-Generation	• Hyperscale Centralized Cloud • Other T1/T2 Cloud DCs • Colocation Provider	• Regional Cloud Sites • Colocation Providers • Enterprise sites • Industrial sites • Telco Points of Presence
• Large Scale Training • High Density Clusters • Fungible DCs	• Efficiency of Scale • Integrate AI • Automation	• Efficient Inference • AI Sovereignty • Smaller Scale Architectures

OCP Technologies Scope

Facilities & Physical Infrastructure, IT Infrastructure, and Systems Management



AI Strategic Initiatives

- Open Systems for AI
- Open Data Centers for AI
- Open Cluster Designs for AI

Technology Projects Categories - Covering 12 Top Level Projects – Over 200 Work Efforts

- Facilities & Physical Infrastructure
- IT Infrastructure
- Systems Management
- Sustainability
- Security

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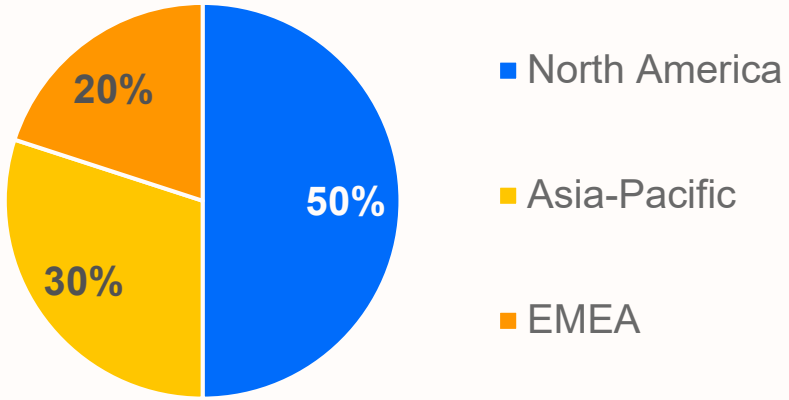
The Open Compute Project (OCP) continues to expand and broaden both its membership and focus

- The Open Compute Project was founded in 2011 by **Facebook**, **Intel**, and **Rackspace**, with **Goldman Sachs** and **Andy Bechtolsheim** joining soon after, to apply open-source principles to datacenter hardware, including servers, storage appliances, scalable rack designs, and other datacenter technologies.
- The OCP is now a large, diverse, and globally distributed community that includes just **over 500 corporate members**, nearly 200 work efforts and thousands of active individual engineers.

OCP corporate members, by region



Source: IDC, 2025

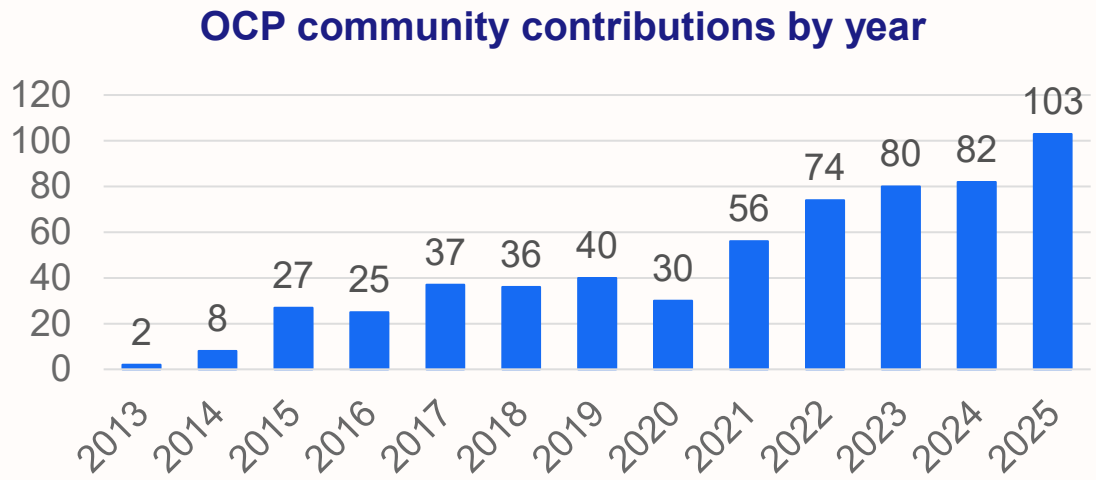
- Although initially focused on large hyperscale datacenter operators and their vendors, OCP membership has expanded to include organizations from the **telecoms**, **financial services**, **manufacturing**, and **oil and gas** industries.
- The OCP's focus has also expanded beyond "greenfield" new build datacenters to include **"brownfield" datacenters** (i.e., retrofits and refurbishments).

The OCP community and vendor ecosystem continues to expand and mature, fuelling technology adoption

- In addition to contributing new technology specifications to the OCP Community, many members are **important end users** of OCP-recognized technologies themselves.
- Use of OCP-recognized infrastructure and technology designs goes beyond the organization's formal membership. Worldwide use of OCP-recognized IT infrastructure continues to grow thanks partly to the way hardware designs are **openly shared and available** to any organization that wants to access and implement them.
- The **ecosystem of solution providers** offering OCP-recognized infrastructure continues to grow and develop, encouraging adoption.

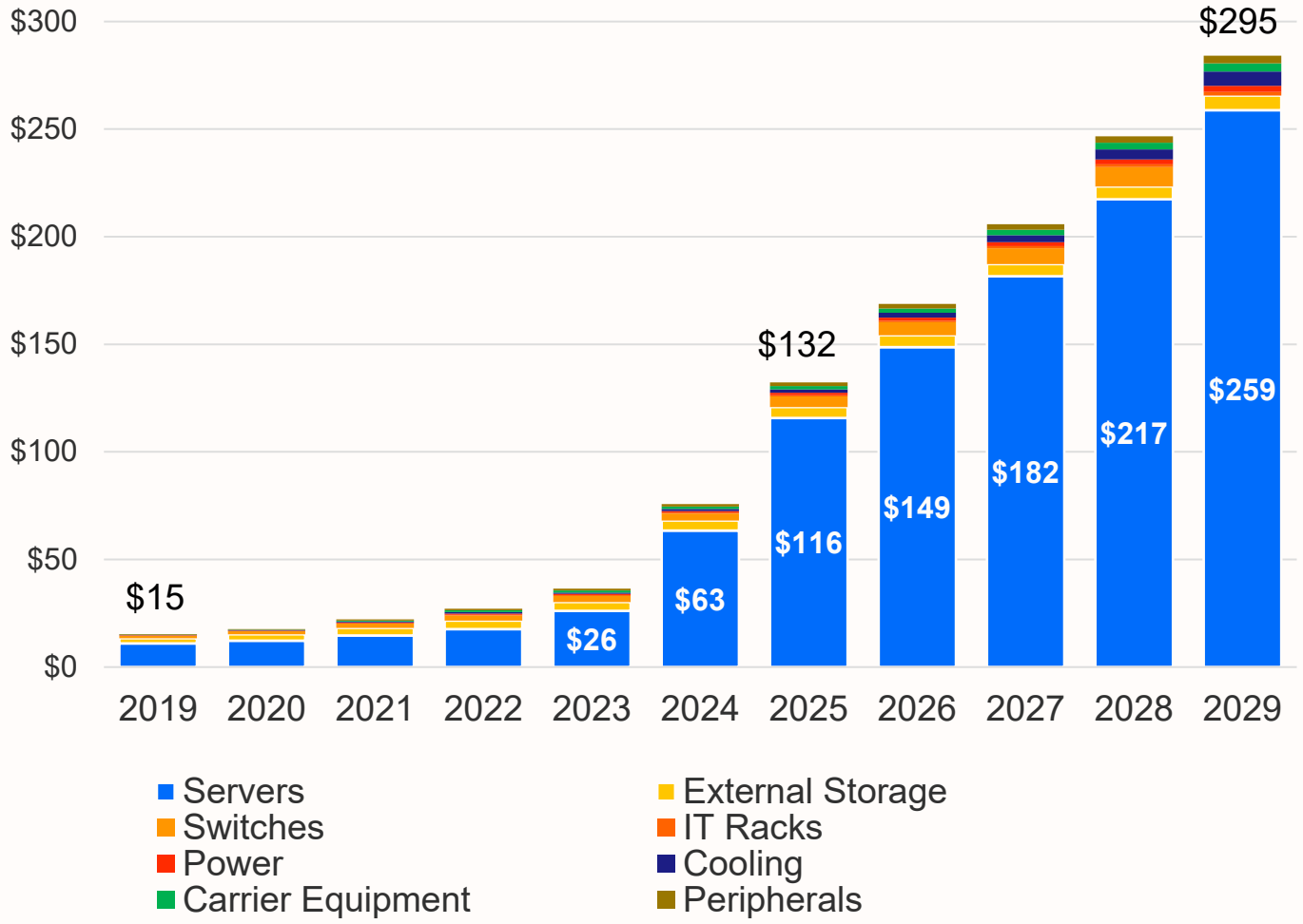
22%

Spending growth on OCP-recognized infrastructure from 2025 to 2029 (CAGR)



Source: IDC

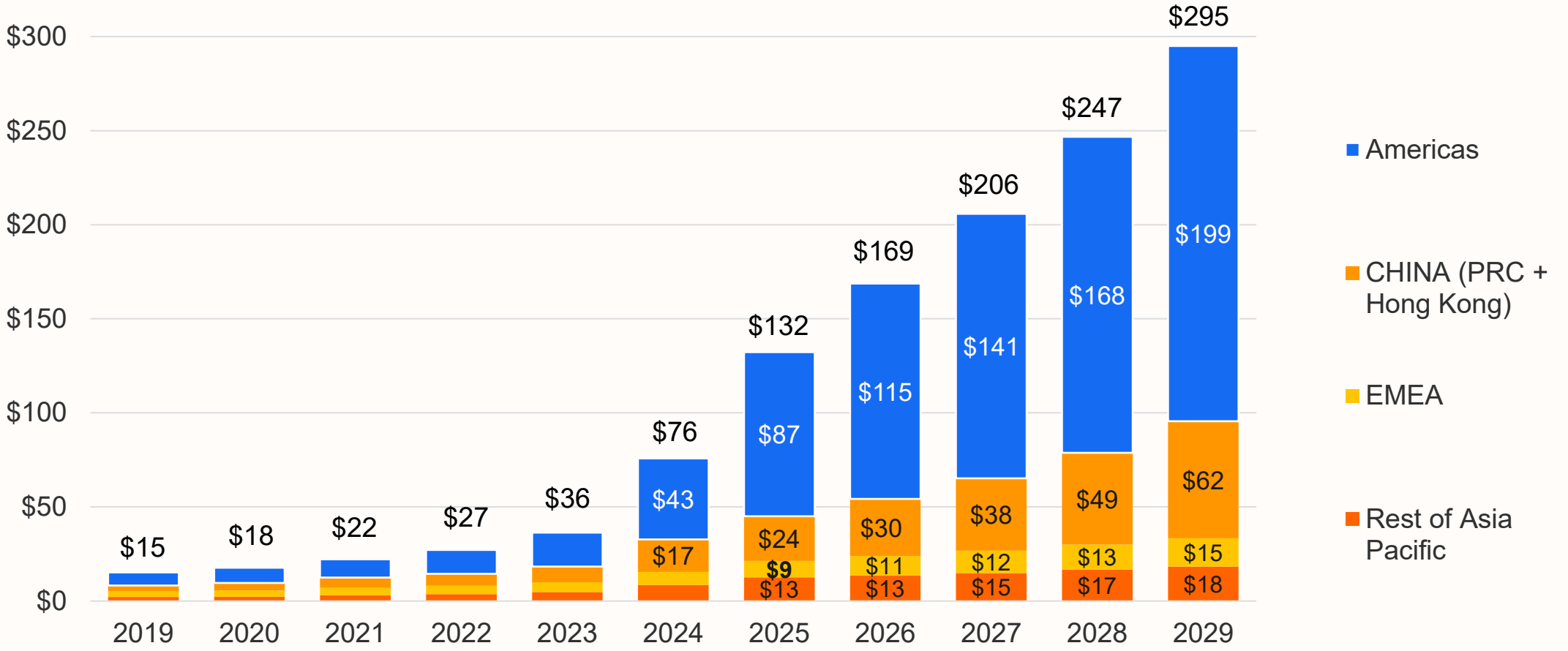
Compute platform investments are driving spending across all OCP-recognized infrastructure categories



Source: IDC, 2025

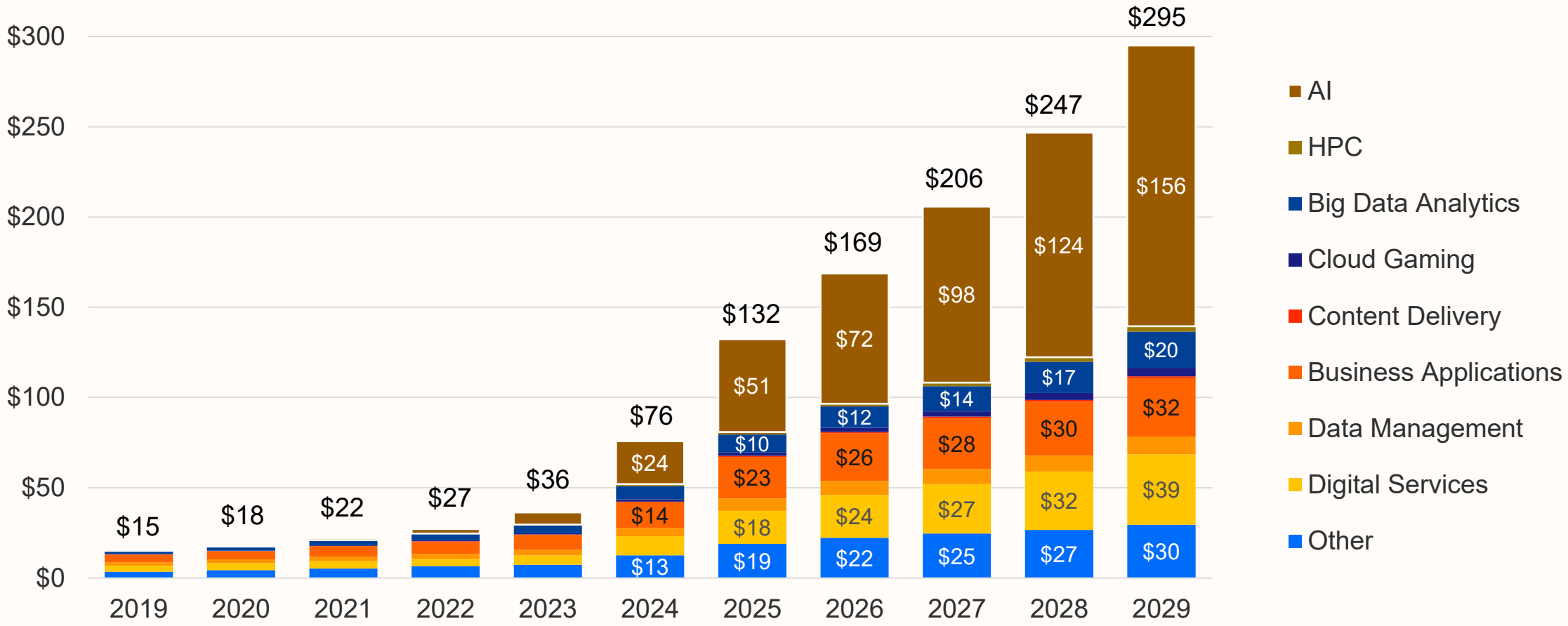
- **Total spending** on OCP-recognized IT infrastructure and solutions will grow to US$295 billion in 2029, up from US$132 billion in 2025, reflecting a CAGR of 22.2%.
- **Server spending** will continue to account for the largest market segment throughout the forecast period.
- However, spending on **cooling technologies** will exhibit the strongest spending growth, as datacenter operators invest in advanced cooling solutions.
- **Hyperscalers** currently account for over 60% of total spending on OCP-specified infrastructure, followed by **cloud service providers**. The hyperscalers will be a major source of continued spending through to 2029.

OCP infrastructure spending by region, 2019-2029 (USD $B)



Source: IDC, 2025

OCP infrastructure spending by use case, 2019-2029 (USD $B)



Source: IDC, 2025

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Server and rack project initiatives prioritize interoperability, scalability, and efficiency

- **Driving server platform interoperability, integration, and energy efficiency**
  - The OCP's focus on servers and rack systems have **evolved** from improving interoperability, integration, and energy efficiency, to preparing server platforms for new **AI workload demands**.
- **Advancing Open Rack capabilities and compatibility**
  - **ORv3** is seeing growing adoption, driven by the hyperscalers, but also the integration of ORv3 designs into OEM rack-scale offerings. Key benefits include increased power capacity and efficiency, enhanced thermal management and options for **integrating advanced liquid cooling technologies**, including cold plates and immersion cooling, and improved flexibility, scalability and manageability based on a modular, open-standards hardware design.

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- **Advancing Open Rack capabilities and compatibility**
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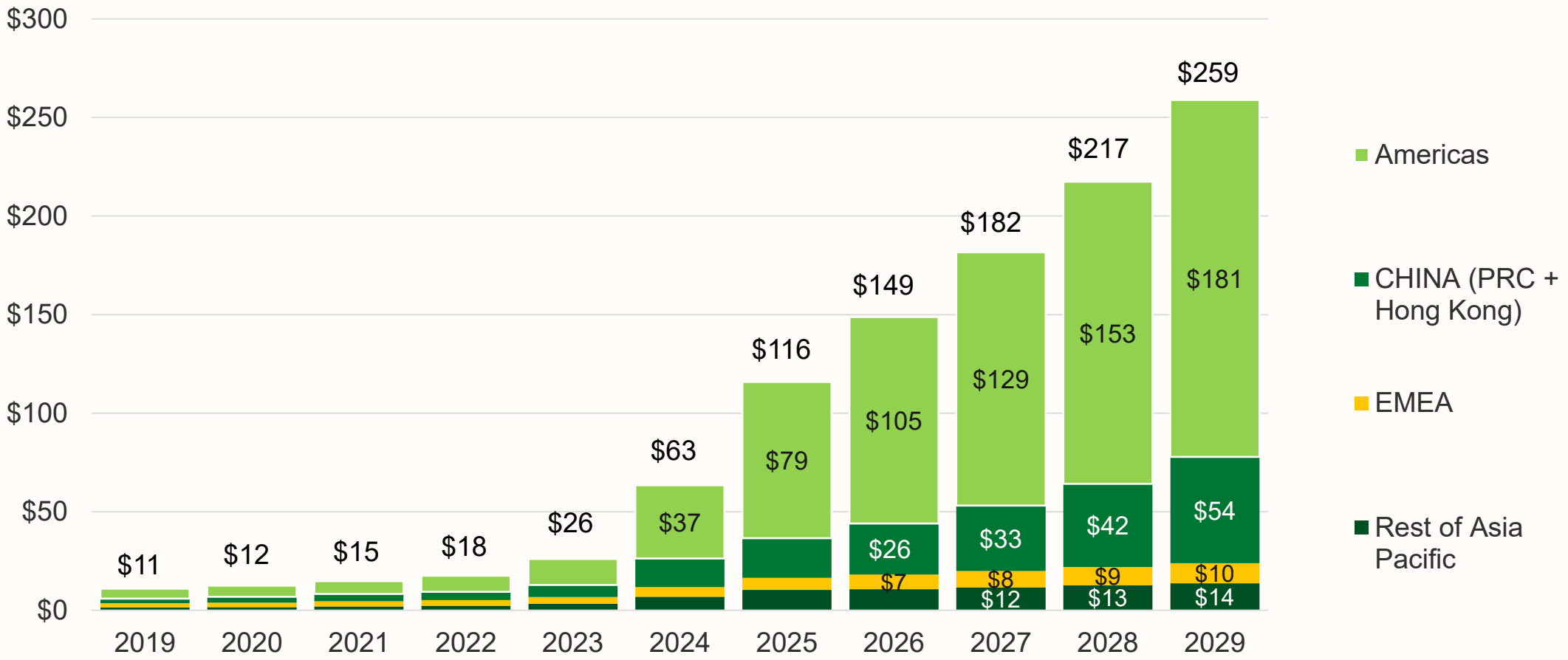
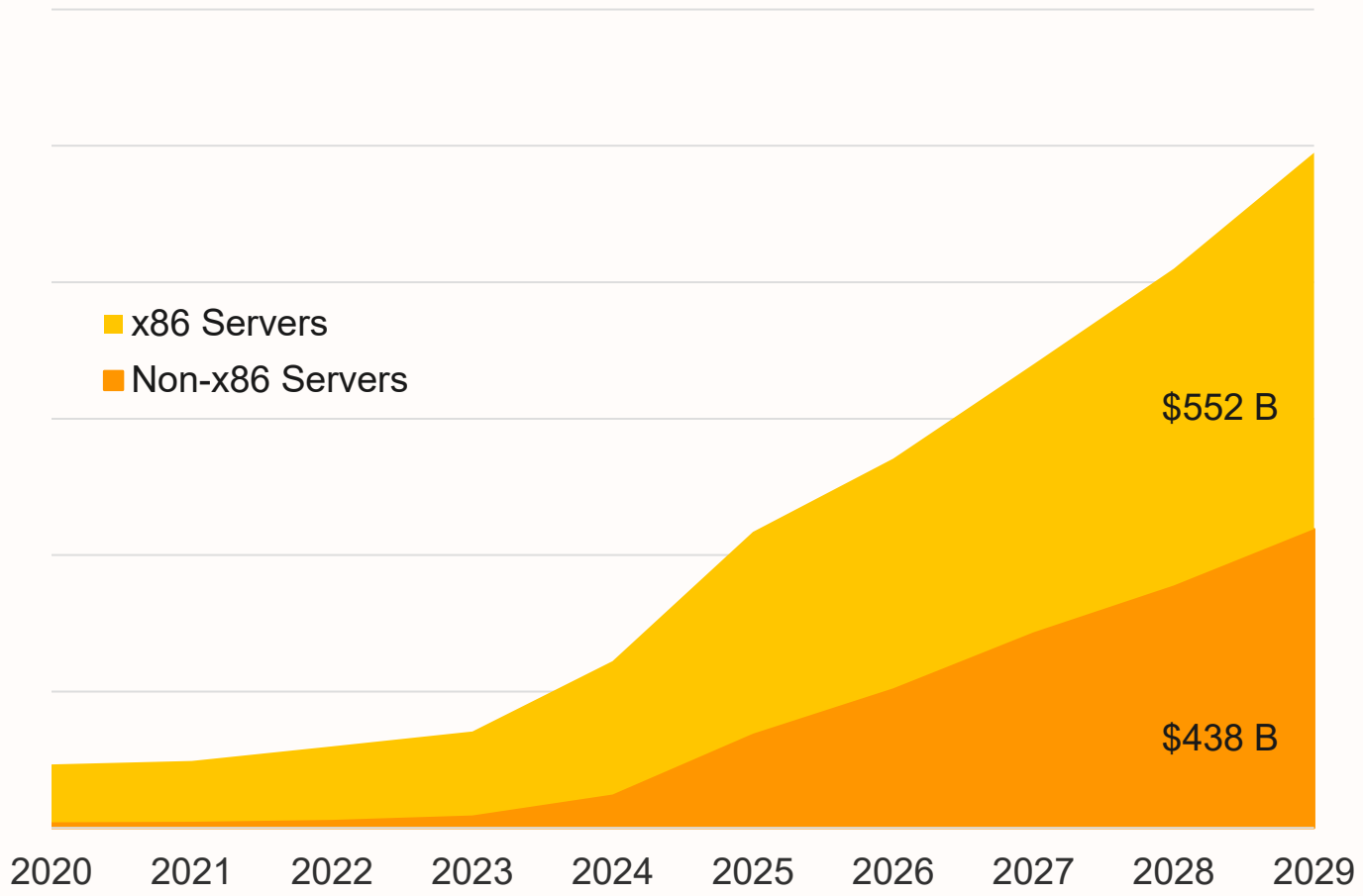
- **Moving towards an open chiplet economy**
  - The OCP is also working to improve the **customization, performance**, **scalability**, and **deployment flexibility** of chiplet infrastructure, as well as chiplet **manufacturing** processes.

OCP-designed server spending to rise to $259 billion in 2029, driven by the need for accelerated compute



Source: IDC, 2025

Investments in GPU-accelerated AI servers are a key contributor to AI infrastructure spending growth



Source: IDC, 2025, Enterprise Infrastructure Server Tracker, 2020–2029

- IDC's **Enterprise Infrastructure Server Tracker** shows that revenue from the sale of **non-x86 servers** more than doubled in 2025, compared with 2024.
- Revenue growth was driven by investments by **hyperscale** internet companies and **cloud service providers** in GPU-accelerated servers to support the increasing demands posed by AI workloads.
- Strong growth is expected for the adoption of **GPU-accelerated servers** over the next four years, with revenue from **non-x86 server** sales predicted to reach $438 billion by 2029, up from $138 billion in 2025.

A major focus for the OCP includes driving standards for AI accelerators and AI clusters

- **Developing a standardized, modular system for AI accelerators**
  - The Open Accelerator Infrastructure sub-project aims to create a standardized, modular system for AI accelerators. It was announced in 2019, with **Facebook**, **Microsoft**, and **Baidu** contributing the **OCP Accelerator Module** design specification to define a common form factor for compute accelerator modules. Objectives include simplifying high-speed communication links between accelerators.

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- **Driving standards for AI cluster development and open, scalable datacenter designs**
  - The **Open Systems for AI Strategic Initiative** develops standards to enhance the efficiency and sustainability of AI clusters and encourage a multi-vendor supply chain. Contributors include **NVIDIA** with its GB200-NVL72 rack and **Meta** with its Catalina and Clemente high-density, liquid-cooled rack system. The newer **Open Data Center for AI Strategic Initiative** supports the development of AI infrastructure by advancing open, standardized designs for physical datacenter infrastructure, including **power**, **cooling**, **mechanicals**, and **telemetry**.

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Driving standards for AI cluster development and open, scalable datacenter designs

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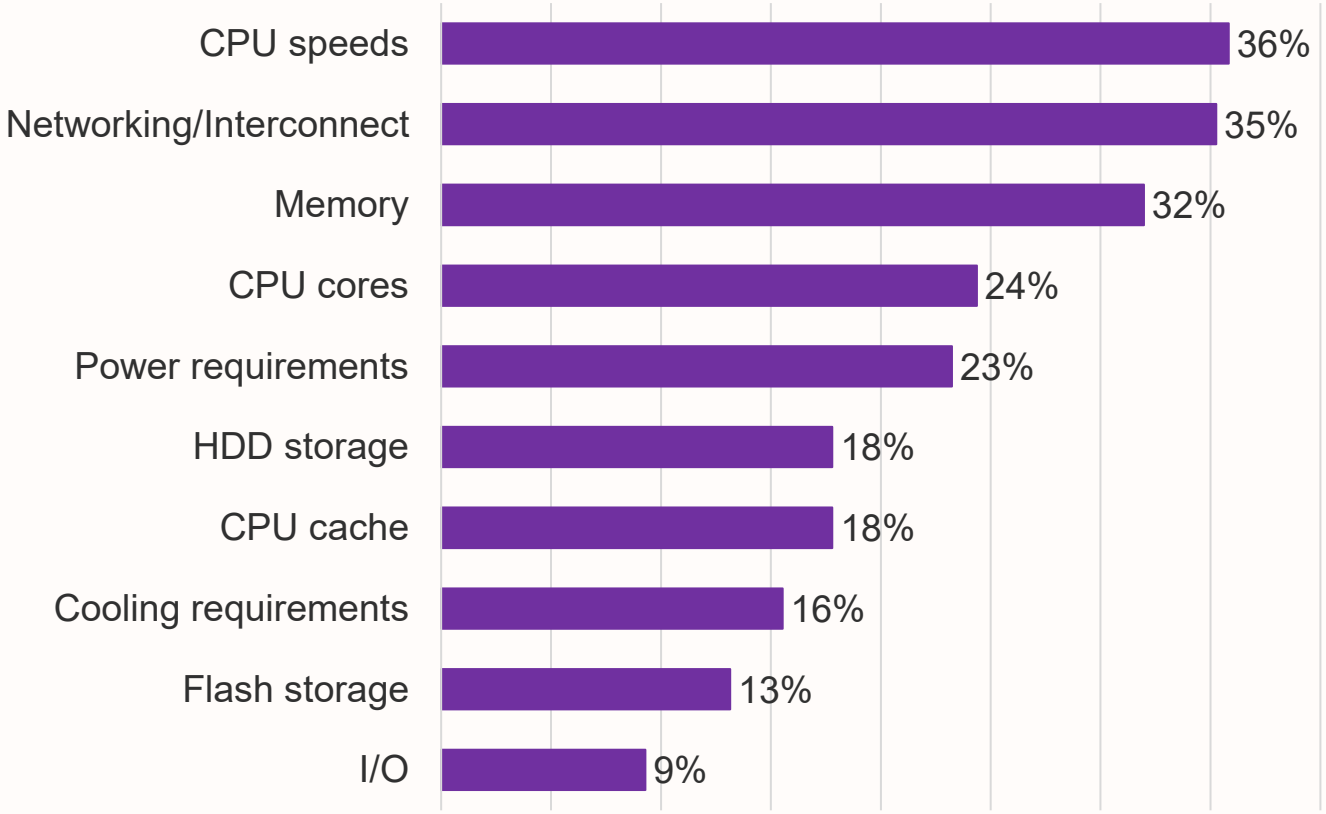
Addressing the challenges of running AI clusters at scale

- With its emphasis on enhancing efficiency and sustainability, the Open Systems for AI Initiative addresses the various challenges associated with running **AI clusters at scale**, including the need for specialized silicon, higher bandwidth and lower latency interconnects.

On-premises compute bottlenecks are widespread and include CPU speeds, memory, and network limitations

Q. What is the greatest resource bottleneck or limitation for your on-premises compute/server infrastructure?



Source: Enterprise Infrastructure Pulse Survey 2025, May 2025, n = 882

- More than one third of organizations identify **CPU speeds** as the biggest resource bottleneck or limitation for their on-premises compute infrastructure. CPU speeds can be affected by different factors, including transmission delays and heat accumulation.
- Other cited challenges include **memory limitations**, **CPU cores**, and challenges related to **networking/interconnect** and **power** and **cooling** requirements.
- **Server performance** can be undermined by network latency while memory limitations can negatively affect server performance by contributing to slower response times, reduced scalability, and higher levels of power consumption.

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OCP project initiatives are preparing datacenter networking for the AI era

- **Enabling network software interoperability**
  - Early project milestones include the **Switch Abstraction Interface** (SAI) Sub-Project, which is committed to enabling network software to run on different hardware platforms. Its goal is the advancement of an open, **disaggregated** approach to networking that encourages faster innovation and reduces vendor lock-in.

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- **Addressing the need for next-generation network fabrics and interconnects**
  - The Networking Project is focused on advancing open hardware designs, higher-speed optics, and switch-to-switch connectivity. Work by **Meta**, **AMD**, **NVIDIA** and others to support the development of next-generation network fabrics, and efforts by **Broadcom**, **Marvell**, **Celestica**, **Credo Semiconductor** and others to advance 800G optical interconnects, are driven by the need to prepare network infrastructure for the future demands of AI.

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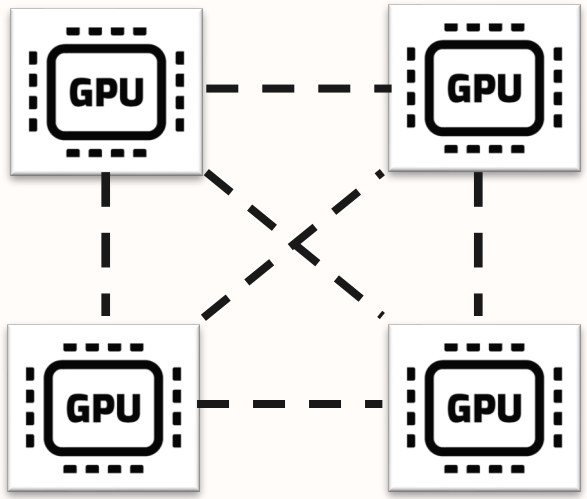
Readying Ethernet technology for Scale-Up networking

- The OCP's **new networking-focused working group** will promote the development of Ethernet for Scale-Up networking. The new OCP Ethernet for Scale-Up Networks working group brings together **Broadcom**, **AMD**, **NVIDIA**, **Cisco**, **HPE** and others, and will initially focus on L2/L3 Ethernet framing and switching, engaging with industry bodies such as the Ultra Ethernet Consortium to agree on open standards and best practices.

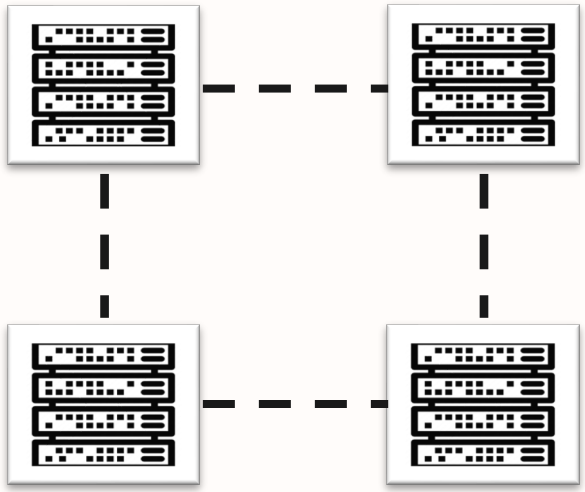
OCP projects and sub-projects are addressing the full range of networking bottlenecks and requirements

SCALE UP



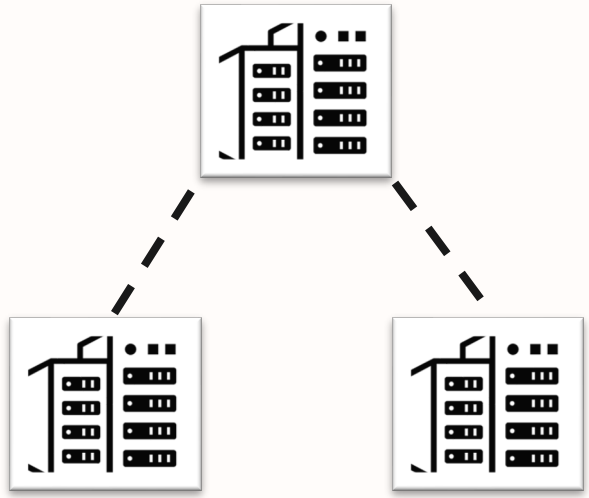
GPU to GPU (Intra-Rack)

SCALE OUT



Rack to Rack (Intra-Datacenter)

SCALE ACROSS



Datacenter to Datacenter

- The new **Ethernet for Scale-Up Networking** (ESUN) working group specifically focuses on advanced Ethernet for high-performance interconnects within large GPU servers. The goal is the development of open, standards-based Ethernet switching and framing for intra-cluster connections.
- The OCP is addressing networking requirements across all these domains via initiatives that include the advancement of 800G optical interconnects, and open, standardized platforms such as **AMD**'s **Helios** AI rack-scale platform, whose UALink and Ultra Ethernet Consortium-based technologies support extensive scale-up (within rack) and scale-out (between racks) architectures.

Audience Poll Question

What are your organizations plans to deploy AI targeted OCP-recognized equipment?

A. Already Deployed
B. In the next 12 months
C. In the next 24 months
D. In the next 36 months
E. No Plans

Audience Poll Results

- Some discussion facilitated by host and analyst of the results with optional comments from sponsors

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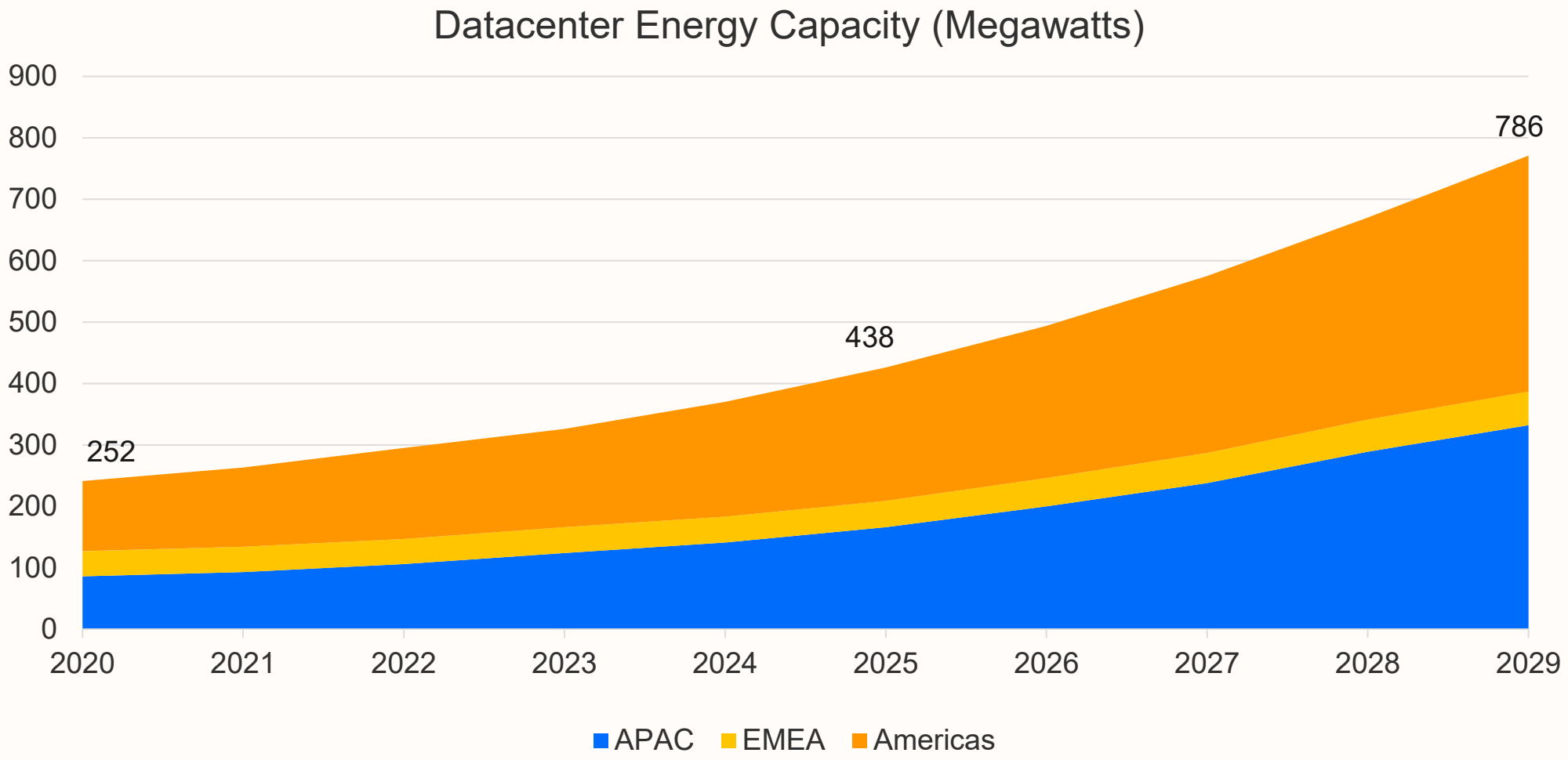
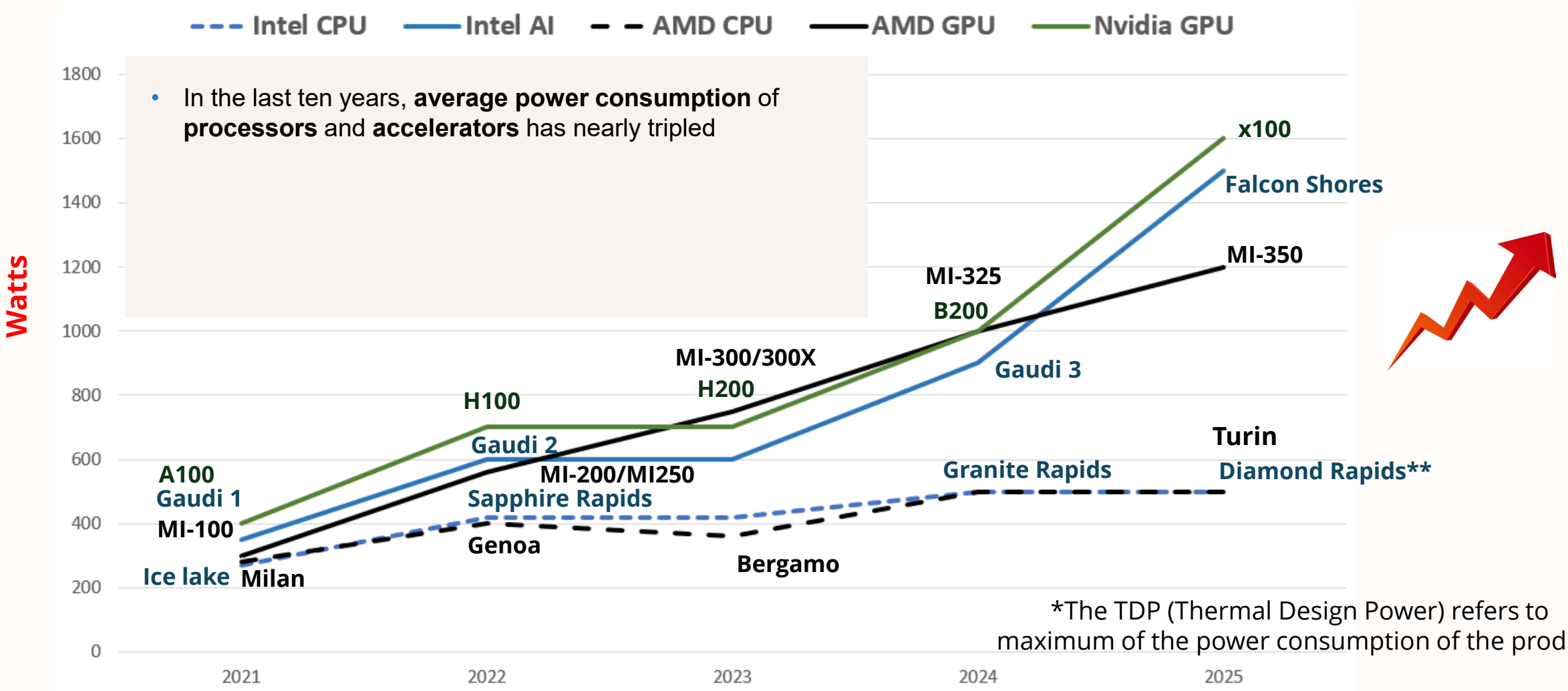
Between 2025 and 2029, datacenter energy capacity will grow by 15.7% (CAGR)



Source: Datacenter Facilities Index, 2H25, IDC, November 2025

Average power consumption and power density per rack is also rising rapidly

- In the last ten years, **average power consumption** of **processors** and **accelerators** has nearly tripled

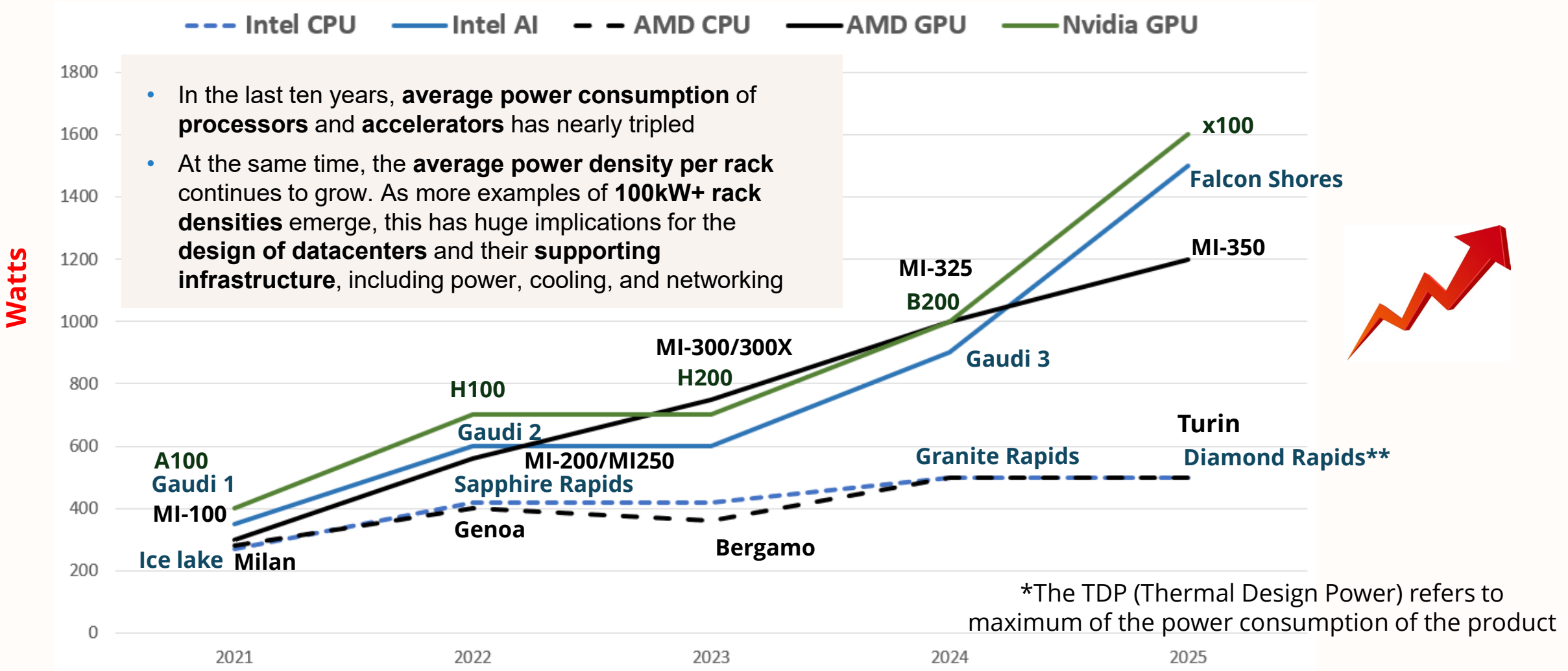


*The TDP (Thermal Design Power) refers to maximum of the power consumption of the product

Source: IDC, 2024, ** Diamond Rapids is based on estimation

Average power consumption and power density per rack is also rising rapidly

- In the last ten years, **average power consumption** of **processors** and **accelerators** has nearly tripled
- At the same time, the **average power density per rack** continues to grow. As more examples of **100kW+ rack densities** emerge, this has huge implications for the **design of datacenters** and their **supporting infrastructure**, including power, cooling, and networking



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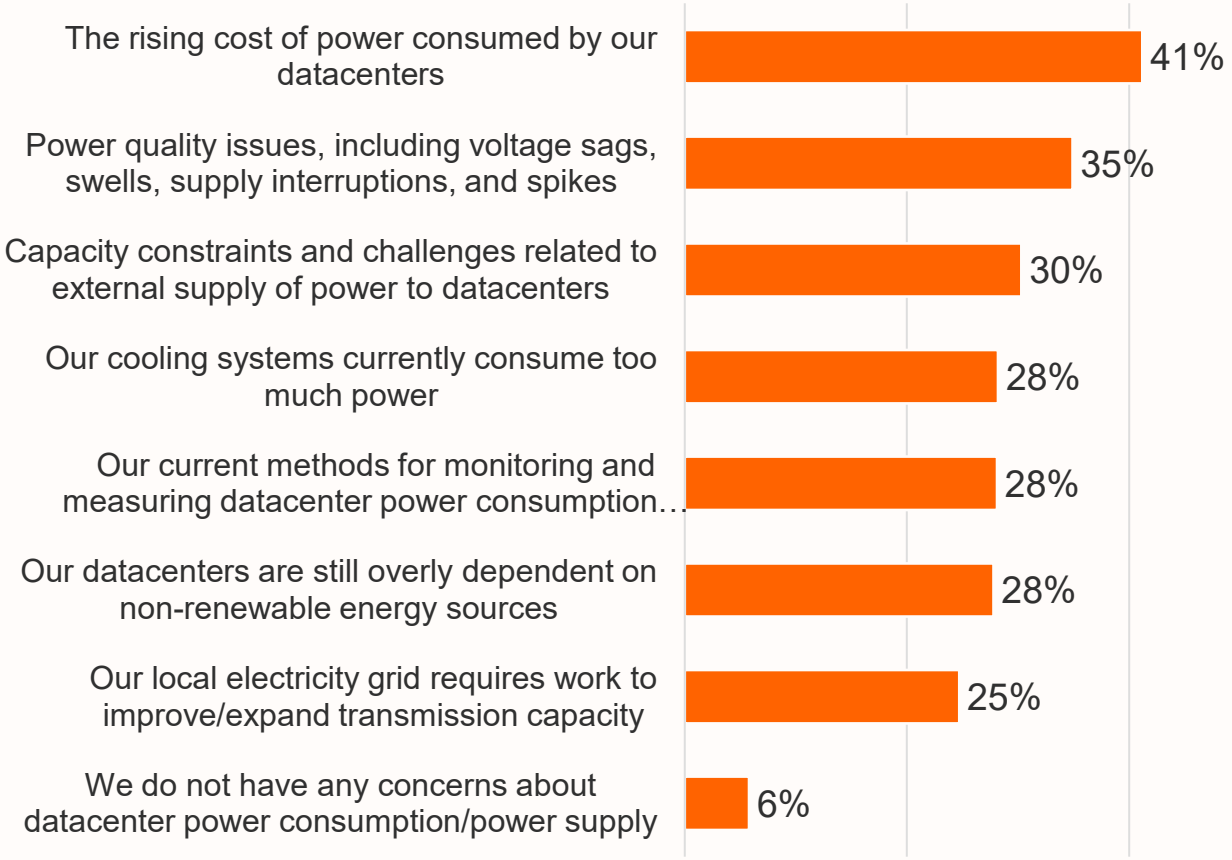
Rising costs, quality issues, and capacity constraints are among the biggest power usage and supply concerns

Q. What are your organization's main concerns related to datacenter power consumption and/or power supply?



Source: Enterprise Infrastructure Pulse Survey 2025, May 2025, n = 882

- 41% of organizations identify the rising **cost of power** required by their datacenters as the biggest power-related concern. **Power quality** issues and **capacity constraints** also feature prominently, identified by 35% and 30% of organizations, respectively.
- Other concerns include an **overdependence on non-renewable energy** sources and the use of unsustainable methods for **monitoring and measuring** datacenter power consumption. Sometimes monitoring strategies focus narrowly on operational energy and do not account for total datacenter energy use.
- Just 6% of organizations say they have **no concerns** about datacenter power consumption and/or power supply.

OCP initiatives include increasing power densities and improving energy efficiency

- **Enhancing rack energy usage and efficiency with ORv3**
  - **ORv3** includes innovations related to power shelves, battery backup units, and power monitoring interfaces. ORv3 incorporates **Harting**'s plug-and-play connector for power shelves, which aims to simplify installation and maintenance and boost energy efficiency.

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- **Moving towards higher-voltage power distribution**
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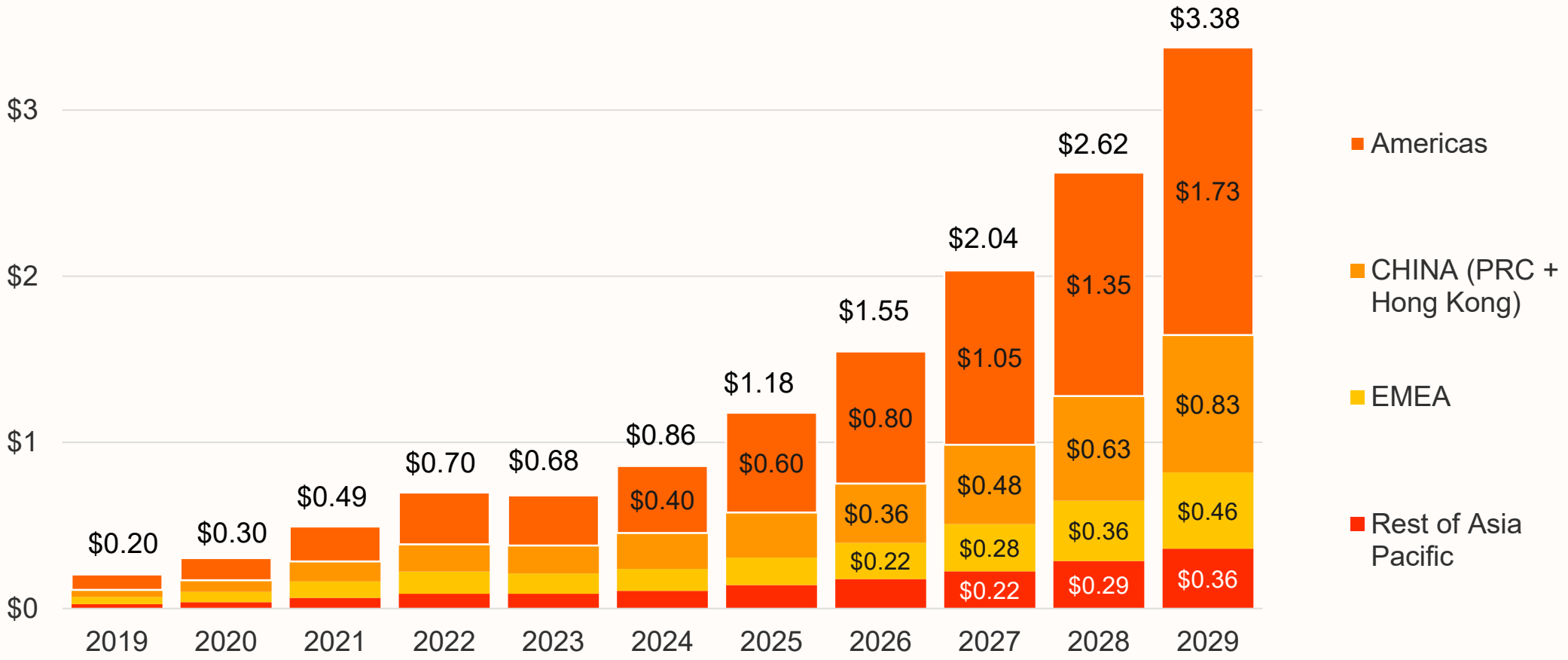
- **Strengthening relations between datacenter and energy grid operators**
  - Initiatives such as **Open Data Center for AI** will help drive standards for more efficient, standardized, and flexible power delivery within AI datacenters, while the **Data Center Facilities Power Distribution Project** aims to encourage standards that will bridge the gap between AI datacenter requirements and utility grid capabilities.

Spending on OCP-specified power infrastructure by region, 2019-2029 (USD $B)



Source: IDC, 2025

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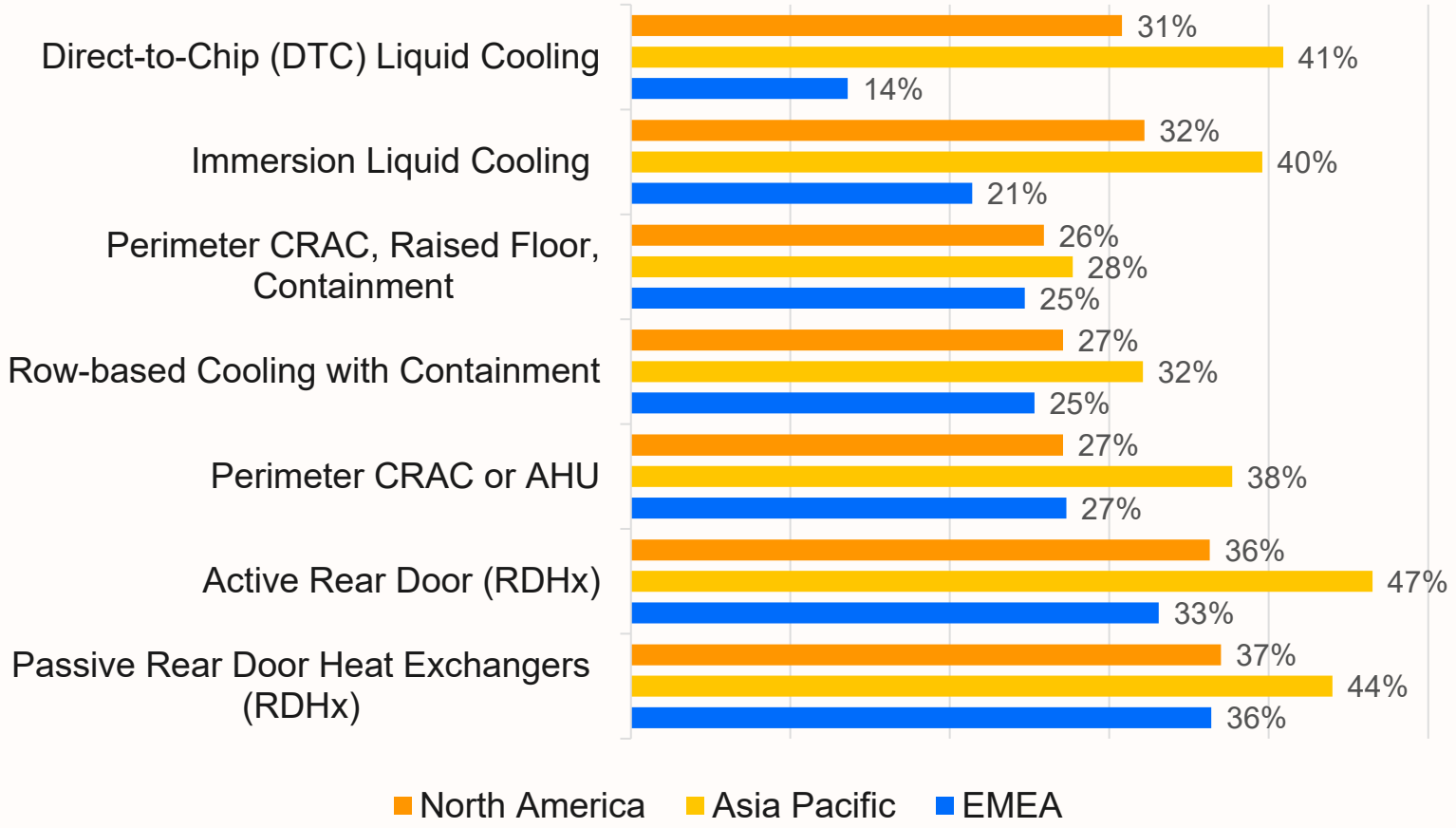
Most organizations use of mixture of datacenter cooling technologies, with use of liquid cooling expected to grow

Q. In the datacenter(s) you own/lease, what types of cooling equipment do you use for your server infrastructure?

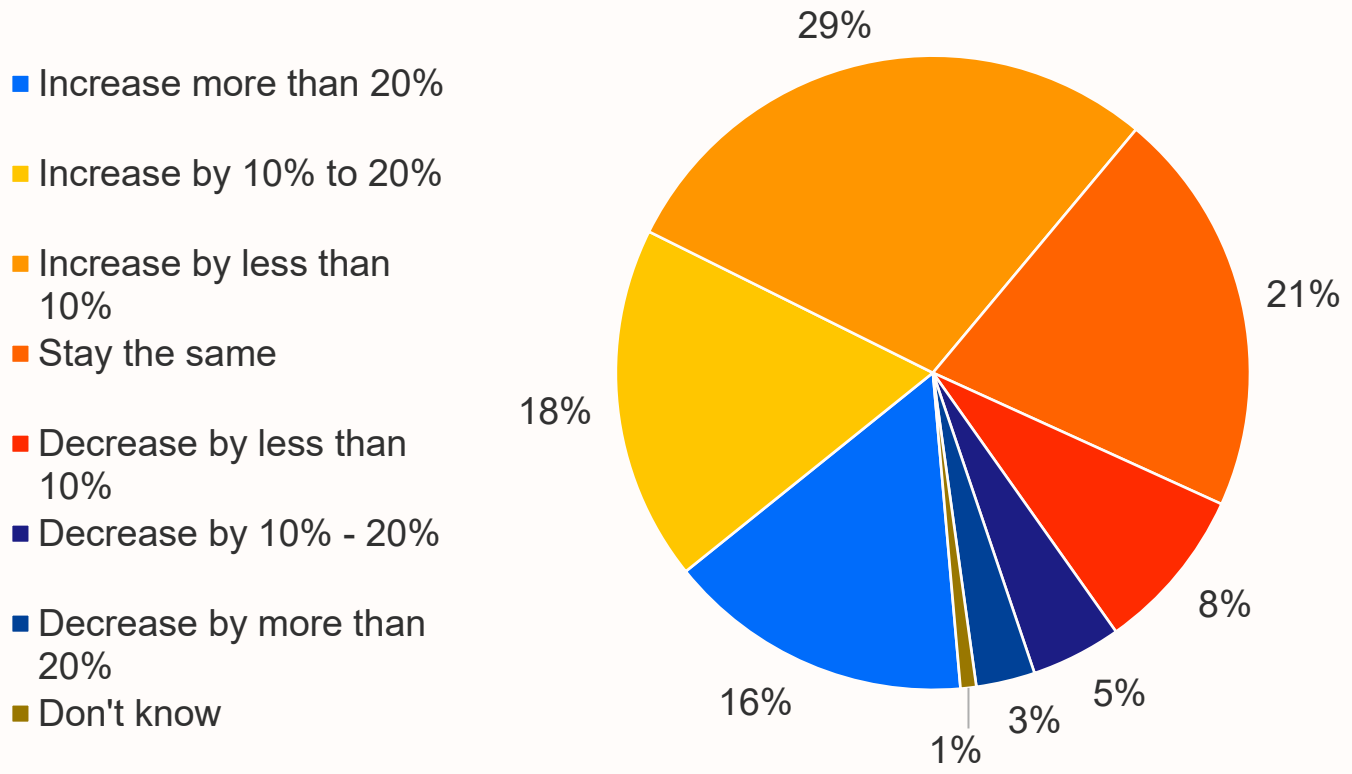


- Use of datacenter cooling technologies varies significantly by region.
- In the EMEA region, the most commonly used technologies are Active and Passive **Rear Door Heat Exchangers**, while the use of **Direct-to-Chip** and **Immersion** Liquid Cooling is still relatively low compared with North America and Asia Pacific.
- Use of the latter is expected to increase as workload demands evolve.

Source: Enterprise Infrastructure Pulse Survey 2025, May 2025, n = 882

Most organizations plan to increase their use of liquid cooling by 10% or more over the next 12 months

Q. In the next 12 months, does your organization plan to increase, decrease, or maintain its usage of liquid cooling?



Source: Enterprise Infrastructure Pulse Survey 2025, May 2025, n = 235

- Most organizations already using liquid cooling plan to **increase their use of liquid cooling** by 10% or more over the next 12 months.
- 16% of organizations anticipate their use of liquid cooling increasing by more than 20%. This figure is even **higher in the Asia Pacific region** where over 30% of organizations expect their use of liquid cooling to increase by over 20%.
- 21% of organizations expect their use of liquid cooling to **stay the same** over the next 12 months, while just 16% anticipate a **decrease** in their use of liquid cooling.

The OCP is advancing standards for liquid cooling and preparing datacenter cooling for AI

- **Driving standards for liquid cooling technology designs and implementation**
  - Through its **Cooling Environments Project**, the OCP helps drive the development of **specifications** for different liquid cooling technologies and **guidelines for integrating and deploying** those technologies. **Universal Quick Disconnect (UQD) 2.0** is a standardized, spill-free, quick-connect coupling technology for connecting and disconnecting liquid cooling systems within high-density datacenters. The OCP has also developed guidelines for the use of **glycol-based heat transfer fluids** in single-phase, direct-to-chip liquid cooling systems.

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Advancing cooling solutions for AI and high-density environments

- **Google** recently announced the contribution of its 5th-Gen CDU design, **Project Deschutes**, to the OCP community, which aims to standardize and accelerate the industry-wide adoption of liquid cooling solutions for high-density AI workloads. The Project draws from almost a decade of real-world experience for Google in the deployment of liquid cooling for its TPUs.

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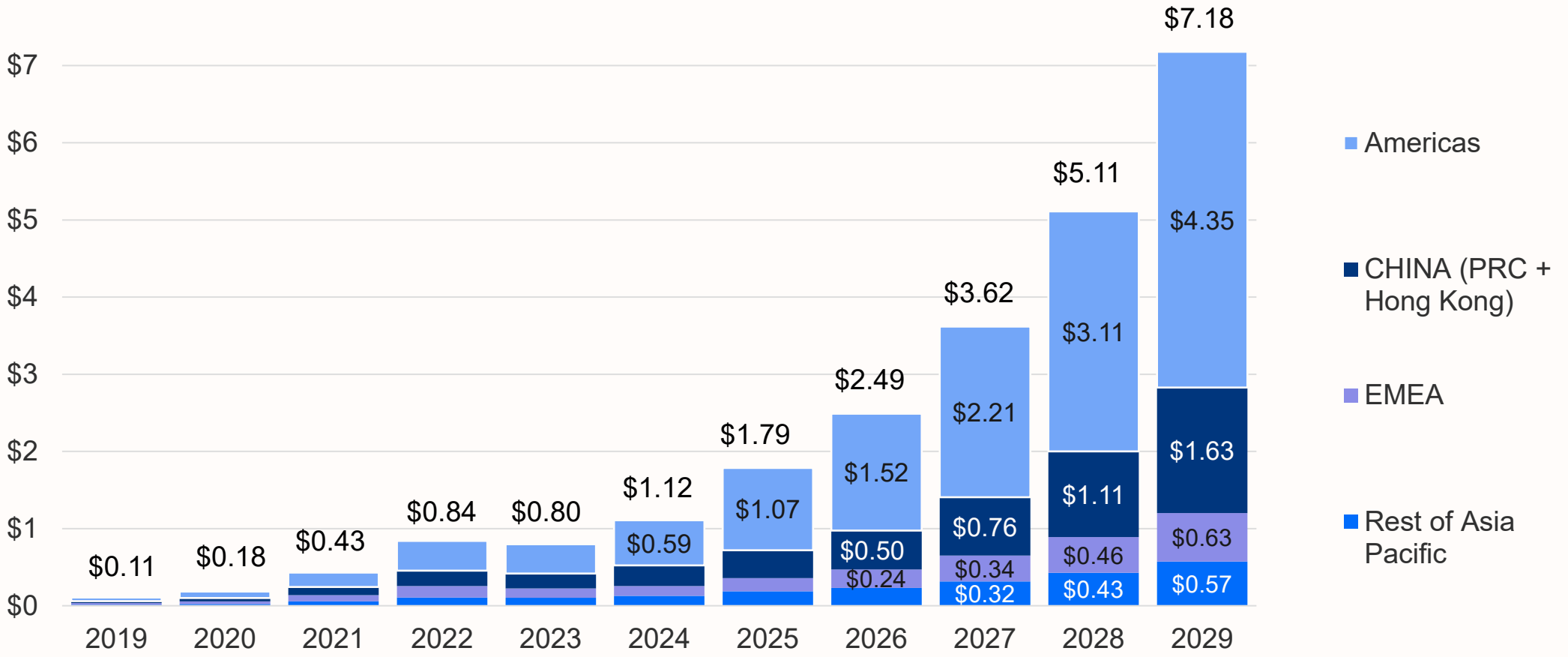
- **Growing ecosystem of vendors offering OCP-recognized cooling solutions**
  - Recent months have seen server manufacturers such as **Dell** and **Supermicro**, and cooling solution vendors such as **Gigabyte**, **Wiwynn**, **Submer**, **Accelsius**, **Compal**, and **LiquidStack** all announce new liquid cooling solutions based on OCP specifications.

Spending on OCP-specified cooling infrastructure by region, 2019-2029 (USD $B)



Source: IDC, 2025

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Various OCP initiatives focus on encouraging sustainable growth for datacenters

Advancing sustainable and scalable infrastructure for AI and HPC workloads

- The OCP's collaboration with **Infrastructure Masons** (iMasons) aims to promote sustainable and scalable digital infrastructure for AI and HPC workloads. In 2025, the OCP and iMasons announced a common, open framework for reporting the carbon impact data associated with datacenter equipment. The Embodied Carbon Disclosure – OCP Base Specification includes contributions from **Google**, **Meta**, **Microsoft**, and **Schneider Electric**, and aims to reduce duplication, align reporting practices, and harmonize carbon disclosure practices.

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- **Promoting the development "green" construction materials for datacenters**
  - Another OCP sustainability initiative is the "green", low carbon concrete for datacenters initiative. The collaboration involves **AWS**, **Google**, **Meta** and **Microsoft** and focuses on producing innovative concrete solutions, some of which would achieve a 50%+ reduction in greenhouse gas emissions compared with existing concrete production techniques.
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- **Encouraging the sustainable use of water resources by datacenters**
  - Growing datacenter water consumption has become a major concern in many parts of the world. OCP initiatives including the **Water Efficiency Metrics & Grading** workstream encourage water use sustainability by establishing a standardized, transparent, and actionable **framework** for measuring, reporting, and benchmarking **datacenter water use**.

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Key takeaways and expectations for 2026

→ Preparing datacenters for large-scale AI and HPC workloads

- The OCP will continue to drive efforts to prepare IT and datacenter **infrastructure for AI and HPC** workloads, especially those deployed at scale. Key focus areas include the development of open-source hardware specifications for **AI clusters** and the continued evolution of **power and cooling** systems to support growing IT power densities. The recently announced **Open Data Center for AI** strategic initiative will drive deeper collaboration to address physical datacenter infrastructure **challenges and bottlenecks**, including those related to **power**, **cooling**, **mechanicals**, and **management**.

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→ Increasing focus on autonomous operations and automated processes

- The scale and complexity of datacenters will increase as their infrastructure evolves to support the growing demand of AI and HPC workloads. This will require a stronger focus on **autonomous operations** and **automated processes**. This will become an increasingly important priority for the OCP, whose collaborative efforts will encourage the standardization of communication protocols for orchestration, monitoring and telemetry.

Key takeaways and expectations for 2026

→ **Advancing sustainability initiatives and "green" datacenter development**

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Continued expansion in edge and non-traditional datacenter environments

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OCP community growth and increased project collaboration

- In 2026 the OCP community will see further growth and expansion, continuing the year-on-year trend that we have seen for several years. In addition to gaining **new members**, the OCP is expected to see increased **collaboration** from its members both in terms of participating in and contributing to its various projects and subprojects. The trend whereby multiple vendors collaborate on specific project contributions is expected to continue.

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A view from IDC on adoption, spend, & buyer intent

Steve Helvie
Chief Emerging Ecosystem Officer
OCP Foundation

Chris Drake
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IDC

Kuba Stolarski
VP, Research
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Thank you for attending

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